

We claim:

1. A process for the production of flexographic printing plates by means of laser engraving, in which the starting material used is a photopolymerizable flexographic printing element at least comprising, arranged one on top of the other,
- 5
- a dimensionally stable substrate,
 - a photopolymerizable, relief-forming layer having a thickness of at least 0.3 mm, at least comprising an elastomeric binder, an ethylenically unsaturated monomer and a photoinitiator, and
 - 10 • a protective element substantially transparent to actinic light,
- wherein the process comprises - in this sequence - the following steps:
- (a) crosslinking of the relief-forming layer in the total volume of the layer by exposure to actinic light through the protective element,
- (b) removal of the protective element and
- 15 (c) engraving of a print relief into the crosslinked relief-forming layer with the aid of a laser emitting from 3 000 to 12 000 nm, the height of the relief elements to be engraved with the laser being at least 0.03 mm,
- and the protective element is a film which has been provided with a nontacky treatment or coating on the side facing the relief-forming layer and which is applied
- 20 directly to the relief-forming layer, the adhesion between the protective element and the relief-forming layer being adjusted so that the protective element can be peeled off the crosslinked, relief-forming layer after process step (a).
2. A process as claimed in claim 1, wherein the protective element comprises a
- 25 nontacky coating.
3. A process as claimed in claim 2, wherein the nontacky layer substantially comprises a polyamide, and the elastomeric binder in the relief-forming layer is a thermoplastic elastomeric block copolymer of the styrene/butadiene type.
- 30

4. A process as claimed in any of claims 1 to 3, which additionally comprises a subsequent cleaning step (d).
5. A process as claimed in any of claims 1 to 4, wherein decomposition products formed in step (c) are sucked away.
6. A process as claimed in any of claims 1 to 5, wherein, after the removal of the protective film (b), the crosslinked relief-forming layer is crosslinked in a subsequent process step (b') to a limited depth of penetration, viewed from the surface, beyond the extent of the crosslinking density produced by step (a).
7. A process as claimed in claim 6, wherein the depth of penetration to which additional crosslinking is effected in step (b') is from 5 to 200 μm .
8. A process as claimed in claim 6 or 7, wherein the surface crosslinking step (b') is carried out using UV light having a wavelength of from 200 to 300 nm.
9. A photopolymerizable flexographic printing element, at least comprising, arranged one on top of the other,
- a dimensionally stable substrate,
 - a photopolymerizable, relief-forming layer having a thickness of at least 0.3 mm, at least comprising an elastomeric binder, an ethylenically unsaturated monomer and a photoinitiator, and
 - a protective element substantially transparent to actinic light,
- wherein the protective element is a film which has been provided with a nontacky treatment or coating on the side facing the relief-forming layer and which is applied directly to the relief-forming layer, the adhesion between the protective element and the relief-forming layer being adjusted so that the protective element can be peeled off the crosslinked relief-forming layer after exposure to actinic light through the protective element.

10. A flexographic printing element as claimed in claim 9, wherein the protective element comprises a nontacky coating.

5 11. A flexographic printing element as claimed in claim 10, wherein the nontacky layer substantially comprises polyamide.